

What is claimed is:

1. A method for actively characterizing the latency of an audio channel of a computer, comprising:

creating at least two signal streams for a waveform in said audio channel;

detecting the presence of the first signal sample stream for said waveform and the second signal sample stream for said waveform at a point in said audio channel; and

measuring the time between the detections of the signal sample streams.

2. The method of claim 1, wherein said audio channel includes an audio signal output device and an audio signal input device;

creating a waveform in said audio channel comprising creating a waveform in said audio channel before said audio signal output device, said waveform having a signature to activate said audio signal output device to produce an audio output signal; and

detecting the presence of a first signal sample stream for said waveform and a second signal sample stream for said waveform at a point in said audio channel comprising detecting the signal sample streams in said audio channel at a point after said audio signal input device, wherein the first signal sample stream was propagated along a reference channel path in said computer and the second signal stream was produced from said audio output signal and propagated along a local channel path in said computer.

3. The method of claim 2, wherein the audio signal output device includes at least one speaker.

4. The method of claim 2, wherein the audio signal input device includes a microphone.

5. The method of claim 2, wherein said waveform comprises a chirp waveform.

6. The method of claim 2, wherein said waveform comprises a pseudo-random sequence waveform.

7. The method of claim 2, wherein said waveform comprises a sine waveform.

8. The method of claim 2, wherein measuring the time between the detections comprises counting the number of signal samples between the detections.

9. The method of claim 1, wherein after creation, the two signal streams propagate along two different paths in said computer.

10. The method of claim 1, wherein said computer comprises a personal computer.

11. The method of claim 1, and further comprising: delaying at least one of the signal sample streams based, at least in part, on the time measured between the detections.

12. A method for actively characterizing the latency of an audio channel of a computer comprising:

3 creating at least a first and a second waveform in said audio channel;
4 detecting the presence of the first and second waveform at a point in said audio
5 channel; and
6 measuring the time between the detections of the waveforms.

1 13. The method of claim 12, wherein at least one of said waveforms comprises a chirp
2 waveform.

1 14. The method of claim 12, wherein at least one of said waveforms comprises a pseudo-
2 random sequence waveform.

1 15. The method of claim 12, wherein at least one of said waveforms comprises a pseudo-
2 random sequence waveform.

1 16. The method of claim 12, wherein after creation, the two waveforms propagate along two
2 different paths in said computer.

1 17. The method of claim 12, wherein said computer comprises a personal computer.

1 18. The method of claim 12, and further comprising: delaying at least one of the waveforms,
2 based at least in part, on the time measured between the detections.

1 19. An article comprising:

2 a machine-readable storage medium, said storage medium having stored thereon
3 instructions, said instructions, when executed by a computer system including an audio channel,
4 resulting in the following steps:

5 creating at least two signal streams for a waveform in said audio channel;
6 detecting the presence of the first and the second signal sample stream for said
7 waveform at a point in said audio channel; and
8 measuring the time between the detections of the signal sample streams.

1 20. The article of claim 19, wherein the waveform comprises a chirp waveform.

1 21. The article of claim 19, wherein the computer system including an audio channel comprises
2 a personal computer system including an audio channel.

1 22. An article comprising;

2 a machine-readable storage medium, said storage medium having stored thereon
3 instructions, said instructions, when executed by a computer system including an audio channel,
4 resulting in the following steps:

5 creating at least two signal waveforms in said audio channel;
6 detecting the presence of the first and the second waveforms at a point in said
7 audio channel; and
8 measuring the time between the detections of the waveforms.

1 23. The article of claim 22, wherein at lease one of the waveforms comprises a chirp
2 waveform.

1 24. The article of claim 22, wherein the computer system including an audio channel comprises
2 a personal computer system including an audio channel.

Table 1. Demographic characteristics of the study population	
Age (years)	Mean (SD)
18-24	20.5 (2.5)
25-34	29.5 (4.5)
35-44	39.5 (5.5)
45-54	49.5 (6.5)
55-64	59.5 (7.5)
65-74	69.5 (8.5)
75-84	79.5 (9.5)
85-94	89.5 (10.5)
95-104	99.5 (11.5)
105-114	109.5 (12.5)
115-124	119.5 (13.5)
125-134	129.5 (14.5)
135-144	139.5 (15.5)
145-154	149.5 (16.5)
155-164	159.5 (17.5)
165-174	169.5 (18.5)
175-184	179.5 (19.5)
185-194	189.5 (20.5)
195-204	199.5 (21.5)
205-214	209.5 (22.5)
215-224	219.5 (23.5)
225-234	229.5 (24.5)
235-244	239.5 (25.5)
245-254	249.5 (26.5)
255-264	259.5 (27.5)
265-274	269.5 (28.5)
275-284	279.5 (29.5)
285-294	289.5 (30.5)
295-304	299.5 (31.5)
305-314	309.5 (32.5)
315-324	319.5 (33.5)
325-334	329.5 (34.5)
335-344	339.5 (35.5)
345-354	349.5 (36.5)
355-364	359.5 (37.5)
365-374	369.5 (38.5)
375-384	379.5 (39.5)
385-394	389.5 (40.5)
395-404	399.5 (41.5)
405-414	409.5 (42.5)
415-424	419.5 (43.5)
425-434	429.5 (44.5)
435-444	439.5 (45.5)
445-454	449.5 (46.5)
455-464	459.5 (47.5)
465-474	469.5 (48.5)
475-484	479.5 (49.5)
485-494	489.5 (50.5)
495-504	499.5 (51.5)
505-514	509.5 (52.5)
515-524	519.5 (53.5)
525-534	529.5 (54.5)
535-544	539.5 (55.5)
545-554	549.5 (56.5)
555-564	559.5 (57.5)
565-574	569.5 (58.5)
575-584	579.5 (59.5)
585-594	589.5 (60.5)
595-604	599.5 (61.5)
605-614	609.5 (62.5)
615-624	619.5 (63.5)
625-634	629.5 (64.5)
635-644	639.5 (65.5)
645-654	649.5 (66.5)
655-664	659.5 (67.5)
665-674	669.5 (68.5)
675-684	679.5 (69.5)
685-694	689.5 (70.5)
695-704	699.5 (71.5)
705-714	709.5 (72.5)
715-724	719.5 (73.5)
725-734	729.5 (74.5)
735-744	739.5 (75.5)
745-754	749.5 (76.5)
755-764	759.5 (77.5)
765-774	769.5 (78.5)
775-784	779.5 (79.5)
785-794	789.5 (80.5)
795-804	799.5 (81.5)
805-814	809.5 (82.5)
815-824	819.5 (83.5)
825-834	829.5 (84.5)
835-844	839.5 (85.5)
845-854	849.5 (86.5)
855-864	859.5 (87.5)
865-874	869.5 (88.5)
875-884	879.5 (89.5)
885-894	889.5 (90.5)
895-904	899.5 (91.5)
905-914	909.5 (92.5)
915-924	919.5 (93.5)
925-934	929.5 (94.5)
935-944	939.5 (95.5)
945-954	949.5 (96.5)
955-964	959.5 (97.5)
965-974	969.5 (98.5)
975-984	979.5 (99.5)
985-994	989.5 (100.5)
995-1004	999.5 (101.5)
1005-1014	1009.5 (102.5)
1015-1024	1019.5 (103.5)
1025-1034	1029.5 (104.5)
1035-1044	1039.5 (105.5)
1045-1054	1049.5 (106.5)
1055-1064	1059.5 (107.5)
1065-1074	1069.5 (108.5)
1075-1084	1079.5 (109.5)
1085-1094	1089.5 (110.5)
1095-1104	1099.5 (111.5)
1105-1114	1109.5 (112.5)
1115-1124	1119.5 (113.5)
1125-1134	